CLAIM AMENDMENTS

1. **(Currently Amended)** A computer-implemented method comprising:

providing a first texture map for a first portion of a three-dimensional surface, the first texture map being associated with a first mapping technique;

providing a second texture map for a second portion of the three-dimensional surface, the second texture map being associated with a second mapping technique that is different from the first mapping technique;

providing a third texture map for a third portion of the three-dimensional surface, the third texture map being associated with the second mapping technique; and

generating a multiple-component map set that includes at least a portion of the first, [[and]] the second and the third texture maps, the first texture map including cylindrical projection information, the second texture map including azimuthal projection information, the third texture map including azimuthal projection information, [[and]] the first portion separating the second portion and third portion, the cylindrical projection information including plane-chart projection information, and wherein the providing the first texture map includes hexagonally re-parameterizing the cylindrical projection information using a linear transform.

2-4. **(Canceled)**

5. **(Previously Presented)** The method as recited in Claim 1, wherein the azimuthal projection information includes equidistant projection information.

6. **(Previously Presented)** The method as recited in Claim 1, wherein the first and second texture maps are stretch-invariant and have a sampling requirement definable as:

$$M_{capped}(\theta) \equiv M_{equi}(\theta) + M_{plane}(\pi/2 - \theta) = 4\theta^2 + 2\pi(\pi/2 - \theta)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

7. **(Original)** The method as recited in Claim 6, wherein θ is equal to about 45°.

8. **(Canceled)**

9. **(Currently Amended)** The method as recited in Claim 1 ~~Claim 8~~, wherein the linear transform is definable as:

$$\hat{S}(u, v) \equiv S(V(u, v)')$$

where

$$V \equiv \begin{bmatrix} k & k/2 \\ 0 & 1 \end{bmatrix}$$

and $k \equiv 2\sqrt{3}/3$.

10-13. **(Canceled)**

14. **(Previously Presented)** The method as recited in Claim 1, wherein the cylindrical projection information includes information selected from at least one type of

projection information selected from a group comprising plane-chart projection information, equal area information, and Mercator information.

15. **(Previously Presented)** The method as recited in Claim 1, wherein the azimuthal projection information includes information selected from at least one type of projection information selected from a group comprising equidistant projection information, stereographic projection information, gnomonic projection information, and equal area projection information.

16. **(Previously Presented)** The method as recited in Claim 1, wherein the first portion is significantly adjacent to both the first and second portions, such that the first portion separates the second and third portions.

17. **(Original)** The method as recited in Claim 1, wherein the three-dimensional surface is curvilinear.

18. **(Original)** The method as recited in Claim 1, wherein the three-dimensional surface includes a spherical surface.

19. **(Original)** The method as recited in Claim 1, wherein providing the first texture map further includes generating the first texture map using the first mapping technique, and providing the second texture map further includes generating the second texture map using the second mapping technique.

20. **(Original)** The method as recited in Claim 1, wherein at least one of the first and second texture maps includes information based on a rectangular sampling matrix.

21. **(Original)** The method as recited in Claim 1, wherein at least one of the first and second texture maps includes information based on a hexagonal sampling matrix.

22. **(Currently Amended)** A computer storage device providing computer instructions suitable for performing steps comprising:

providing a first texture map for a first portion of a three-dimensional surface, the first texture map being associated with a first mapping technique;

providing a second texture map for a second portion of the three-dimensional surface, the second texture map being associated with a second mapping technique that is different from the first mapping technique;

providing a third texture map for a third portion of the three-dimensional surface, the third texture map being associated with the second mapping technique, and wherein the third texture map includes azimuthal projection information for the third portion; and

generating a multiple-component map set that includes at least a portion of the first and the second texture map, the first texture map including at least one of cylindrical projection information or Mercator projection information for the first portion, [[and]] the second texture map including at least one of azimuthal projection information or stereographic projection information for the second portion.

wherein:

the first texture map includes cylindrical projection information for the first portion, and the second texture map includes azimuthal projection information for the second portion,

the multiple-component map set is a three-component map set,

the second and third portion are two poles, the first portion is the area between the second and third portions,

the cylindrical projection information includes plane-chart projection information, and

the providing the first texture map further includes means for hexagonally re-parameterizing the cylindrical projection information using a linear transform.

23-25. **(Canceled)**

26. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> Claim 24, wherein the azimuthal projection information includes equidistant projection information.

27. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> Claim 23, wherein the first and second texture maps are stretch-invariant and have a sampling requirement definable as:

$$M_{capped}\left(\theta\right) \equiv M_{equi}\left(\theta\right) + M_{plane}\left(\pi/2 - \theta\right) = 4\theta^2 + 2\pi(\pi/2 - \theta)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

28. **(Previously Presented)** The computer storage device as recited in Claim 27, wherein θ is equal to about 45°.

29. **(Canceled)**

30. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> ~~Claim 29~~, wherein the linear transform is definable as:

$$\hat{S}(u, v) \equiv S(V(u, v)')$$

where

$$V \equiv \begin{bmatrix} k & k/2 \\ 0 & 1 \end{bmatrix}$$

and $\;k \equiv 2\sqrt{3}/3$.

31. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein the first texture map includes Mercator projection information for the first portion, and the second texture map includes stereographic projection information for the second portion.

32. **(Previously Presented)** The computer storage device as recited in Claim 31, further comprising computer instructions suitable for performing the step of:

providing a third texture map for a third portion of the three-dimensional surface, the third texture map being associated with the second mapping technique, and wherein the third texture map includes stereographic projection information for the third portion.

33. **(Previously Presented)** The computer storage device as recited in Claim 31, wherein the first and second texture maps are conformal and have a sampling requirement definable as:

$$M_{capped}\,(\theta) \equiv M_{stereo}\,(\theta) + M_{Mercator}\,(\pi/2 - \theta)$$
$$= 16tan^2(\theta/2) + \pi\ln\left((1 + \cos\theta)/(1 - \cos\theta)\right)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

34. **(Previously Presented)** The computer storage device as recited in Claim 33, wherein θ is equal to about 47.8°

35. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> ~~Claim 24~~, wherein the cylindrical projection information includes information selected from at least one type of projection information selected from a group comprising plane-chart projection information, equal area information, and Mercator information.

36. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> ~~Claim 24~~, wherein the azimuthal projection information includes information selected from at least one type of projection information selected from a group comprising equidistant projection information, stereographic projection information, gnomonic projection information, and equal area projection information.

37. **(Currently Amended)** The computer storage device as recited in <u>Claim 22</u> ~~Claim 24~~, wherein the first portion is significantly adjacent to both the first and second portions, such that the first portion separates the second and third portions.

38. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein the three-dimensional surface is curvilinear.

39. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein the three-dimensional surface includes a spherical surface.

40. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein providing the first texture map further includes generating the first texture map using the first mapping technique, and providing the second texture map further includes generating the second texture map using the second mapping technique.

41. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein at least one of the first and second texture maps includes information based on a rectangular sampling matrix.

42. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein at least one of the first and second texture maps includes information based on a hexagonal sampling matrix.

43. **(Currently Amended)** A computing device comprising:

one or more processors;

memory to store computer-program instructions executable by the one or more processors; and

logic module configured to:

provide a first texture map for a first portion of a three-dimensional surface, the first texture map being associated with a first mapping technique and a second texture map for a second portion of the three-dimensional surface, the second texture map being associated with a second mapping technique that is different from the first mapping technique, [[and]]

output graphically displayable information based on at least a portion of the first and second texture maps, the first texture map including at least one of cylindrical projection information or Mercator projection information for the first portion, and the second texture map including at least one of azimuthal projection information or stereographic projection information for the second portion, and

provide a third texture map for a third portion of the three-dimensional surface, the third texture map being associated with the second mapping technique,

wherein

the first texture map includes cylindrical projection information for the first portion, and the second texture map includes azimuthal projection information for the second portion,

the third texture map includes azimuthal projection information for the third portion,

the cylindrical projection information includes plane-chart projection information, and

the cylindrical projection information in the first texture map has been hexagonally re-parameterized the using a linear transform.

44-46. **(Canceled)**

47. **(Currently Amended)** The computing device as recited in <u>Claim 43</u> <s>Claim 45</s>, wherein the azimuthal projection information includes equidistant projection information.

48. **(Currently Amended)** The computing device as recited in <u>Claim 43</u> <s>Claim 44</s>, wherein the first and second texture maps are stretch-invariant and have a sampling requirement definable as:

$$M_{capped}\,(\theta) \equiv M_{equi}\,(\theta) + M_{plane}\,(\pi/2 - \theta)\ = 4\theta^2\ + 2\pi(\pi/2 - \theta)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

49. **(Previously Presented)** The computing device as recited in Claim 48, wherein θ is equal to about 45°.

50. **(Canceled)**

51. **(Currently Amended)** The computing device as recited in Claim 43 Claim 50, wherein the linear transform is definable as:

$$\hat{S}(u,v) \equiv S(V(u,v)')$$

where

$$V \equiv \begin{bmatrix} k & k/2 \\ 0 & 1 \end{bmatrix}$$

and $k \equiv 2\sqrt{3}/3$.

52. **(Previously Presented)** The computing device as recited in Claim 43, wherein the first texture map includes Mercator projection information for the first portion, and the second texture map includes stereographic projection information for the second portion.

53. **(Previously Presented)** The computing device as recited in Claim 52, wherein the logic is further configured to provide a third texture map for a third portion of

the three-dimensional surface, the third texture map being associated with the second mapping technique, and wherein the third texture map includes stereographic projection information for the third portion.

54. **(Previously Presented)** The computing device as recited in Claim 52, wherein the first and second texture maps are conformal and have a sampling requirement definable as:

$$M_{capped}\,(\theta) \equiv M_{stereo}\,(\theta) + M_{Mercator}\,(\pi/2 - \theta)$$

$$= 16tan^2(\theta/2) + \pi ln\left((1 + cos\theta)/(1 - cos\theta)\right)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

55. **(Previously Presented)** The computing device as recited in Claim 54, wherein θ is equal to about 47.8°.

56. **(Currently Amended)** The computing device as recited in Claim 43 ~~Claim 45~~, wherein the cylindrical projection information includes information selected from at least one type of projection information selected from a group comprising plane-chart projection information, equal area information, and Mercator information.

57. **(Currently Amended)** The computing device as recited in Claim 43 ~~Claim 45~~, wherein the azimuthal projection information includes information selected from at least one type of projection information selected from a group comprising equidistant

projection information, stereographic projection information, gnomonic projection information, and equal area projection information.

58. **(Currently Amended)** The computing device as recited in <u>Claim 43</u> ~~Claim 45~~, wherein the first portion is significantly adjacent to both the first and second portions, such that the first portion separates the second and third portions.

59. **(Previously Presented)** The computing device as recited in Claim 43, wherein the three-dimensional surface is curvilinear.

60. **(Previously Presented)** The computing device as recited in Claim 43, wherein the three-dimensional surface includes a spherical surface.

61. **(Previously Presented)** The computing device as recited in Claim 43, wherein the logic is further configured to analyze the texture map per at least one criterion to determine an appropriate texture resolution when providing the first texture map.

62. **(Previously Presented)** The computing device as recited in Claim 43, wherein the logic is further configured to analyze the texture map per at least one metric criterion to determine a requisite number of texture maps in addition to the first texture map when providing the first texture map.

63. **(Previously Presented)** The computing device as recited in Claim 43, wherein at least one of the first and second texture maps includes information based on a rectangular sampling matrix.

64. **(Previously Presented)** The computing device as recited in Claim 43, wherein at least one of the first and second texture maps includes information based on a hexagonal sampling matrix.

65. - 69. **(Canceled)**

70. **(Original)** The method as recited in Claim 1, wherein providing the first texture map further includes analyzing the texture map per at least one criterion to determine an appropriate texture resolution.

71. **(Original)** The method as recited in Claim 1, wherein providing the first texture map further includes analyzing the texture map per at least one metric criterion to determine a requisite number of texture maps in addition to the first texture map.

72. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein providing the first texture map further includes analyzing the texture map per at least one criterion to determine an appropriate texture resolution.

73. **(Previously Presented)** The computer storage device as recited in Claim 22, wherein providing the first texture map further includes analyzing the texture map per at least one metric criterion to determine a requisite number of texture maps in addition to the first texture map.

74. **(Currently Amended)** A computer-implemented method comprising:

providing a first texture map for a first portion of a three-dimensional surface, the first texture map being associated with a first mapping technique;

providing a second texture map for a second portion of the three-dimensional surface, the second texture map being associated with a second mapping technique that is different from the first mapping technique, the first texture map including Mercator projection information for the first portion, and the second texture map including stereographic projection information for the second portion;

providing a third texture map for a third portion of the three-dimensional surface, the third texture map being associated with the second mapping technique, and the third texture map including stereographic projection information for the third portion; and

generating a multiple-component map set that includes at least a portion of the first, the second and the third texture map, wherein

the first and second texture maps are conformal and have a sampling requirement definable as:

$$M_{capped}\,(\theta) \equiv M_{stereo}\,(\theta) + M_{Mercator}\,(\pi/2 - \theta)$$

$$= 16tan^2(\theta/2) + \pi\ln\left((1 + \cos\theta)/(1 - \cos\theta)\right)$$

where θ is a transition angle from a defined point on the surface to where the second texture map is adjacent to the first texture map.

75. **(Canceled)**

76. **(Currently Amended)** The method as recited in <u>Claim 74</u> ~~Claim 75~~, wherein θ is equal to about 47.8°.